

Introduction to Numerical Modeling Centers



Objective

- Given access to meteorological data, interpret numerical weather prediction products IAW an evaluation checklist.

Overview

- FNMOC
- NCEP
- AFWA
- ECMWF
- UKMO
- JMA
- CMC
- A Few Others

FNMOC

- Navy's, Fleet Numerical Meteorology & Oceanography Center
 - Located in Monterey, California
- Models
 - Navy Operational Global Analysis and Prediction System (**NOGAPS**)
 - Coupled Ocean/Atmosphere Mesoscale Prediction System (**COAMPS**)
 - Ensemble Forecast System (**EFS**)
 - Global and Regional Wave Model (**GWAM** and **RWAM**).
- Two runs a day, 00Z and 12Z

NCEP

- National Center for Environmental Prediction
 - A branch of the National Weather Service (NWS)
- Models
 - Aviation/Medium Range Forecast (**AVN/MRF**)
 - Medium Range Ensemble (**ENS**)
 - Rapid Update Cycle (**RUC**)
 - Regional Spectral Model (**RSM**),
 - Nested Grid Model (**NGM**)
 - **Eta** and **Short Range Ensemble** Forecast
- 00Z and 12Z run times for main models

AFWA

- Air Force Weather Agency
 - Mesoscale Model Version 5 (**MM5**)
 - NOGAPS is the parent model
 - MM5 is similar in many respects to COAMPS

ECMWF

- European Center for Medium Range Weather Forecasting
- Runs the most accurate forecasting model in the world today
 - It is a global grid point model similar to COAMPS in structure, but not as high resolution.
- Perform an ensemble model run
- Only one run a day!

UKMO

- United Kingdom Meteorology Office
- Runs an in-house developed model known as the Unified Model (UM)
 - The global version of this model is run twice daily out to 6 days
 - A mesoscale version of the UM centered over the UK is run 4 times per day.

JMA

- Japanese Meteorological Agency
- Runs both global, regional, and ensemble models,
 - Regional model is centered over Japan
- Their global and regional models run twice per day, 00Z and 12Z

CMC

- Canadian Meteorological Center
 - provides forecast guidance to national and regional prediction centers
- Run numerous models
 - Global Environmental Multiscale (GEM)
 - Regional over North America
 - Ensemble
 - Ocean Wave Forecast
- Two runs a day

A Few Others

- Australian Model Center
- Just about every European country has a mesoscale model (France, Spain, etc...)
 - Use only after being verified!
- Numerous Universities run a version of MM5's
 - Use with caution since mainly a research tool
 - Not the same as AFWA MM5

Summary

- Atmospheric model centers
 - FNMOC
 - NOGAPS, COAMPS, and wave models
 - NCEP
 - AVN/MRF, ENS, RUC, RSM, NGM, and Eta
 - AFWA
 - MM5, parent model is NOGAPS

Summary Continued

- ECMWF
 - Runs global & ensemble once a day
 - Consider Most Accurate
- UKMO
 - UM/UKMET
- JMA
 - Runs global, regional, and ensemble models

Summary Continued

- CMC
 - Runs global, regional and ensemble models
- A Few Others
 - Australian
 - Use with caution!
 - Numerous rogue European mesoscale models
 - University MM5's, mainly used for research

Web Links

- FNMOC -- <http://www.fnmoc.navy.mil>
- NCEP -- <http://www.ncep.noaa.gov/>
- AFWA -- <https://www.login.afwa.af.mil/>
- ECMWF -- <http://www.ecmwf.int/>
- UKMO --
- JMA -- <http://www.kishou.go.jp/english/>
- CMC --
http://weatheroffice.ec.gc.ca/canada_e.html
- AUS -- <http://www.bom.gov.au/>